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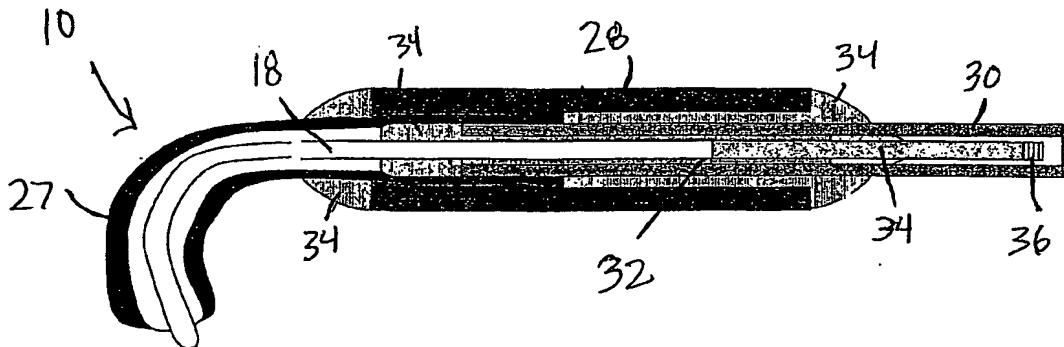
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(54) Title: FIBER OPTIC TEMPERATURE SENSOR



(57) Abstract: A fiber optic temperature sensor (10) and system employ optical fiber (fiber 34) and a fiber Bragg grating (36) using non-silica materials that can withstand temperature ranges extending well above the silica-imposed limit of 1,100 degrees C. The system measures the wavelength shift of light reflected from the fiber Bragg grating (36) and converts it into a temperature value. Specific optical fibers include sapphire, which can be used at temperatures approaching 1,800 degrees C, and yttria-stabilized zirconia (YSZ), which can be used at temperature in excess of 2,300 degrees C. One specific grating employs alternating layers of YSZ, with the percentage of yttria varying in the alternating layers to achieve the desired difference of refractive index, and another grating employs alternating layers of alumina and zirconia.

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